

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 10 May 1999 (10.05.99)	To: United States Patent and Trademark Office (Box PCT) Crystal Plaza 2 Washington, DC 20231 ÉTATS-UNIS D'AMÉRIQUE
International application No. PCT/EP98/06749	Applicant's or agent's file reference C 2551 PCT
International filing date (day/month/year) 23 October 1998 (23.10.98)	Priority date (day/month/year) 24 October 1997 (24.10.97)
Applicant INZÉ, Dirk et al	

1. The designated Office is hereby notified of its election made:

 in the demand filed with the International Preliminary Examining Authority on:

17 March 1999 (17.03.99)

 in a notice effecting later election filed with the International Bureau on:

2. The election was was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Jean-Marie McAdams
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference C 2551 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP98/06749	International filing date (day/month/year) 23/10/1998	Priority date (day/month/year) 24/10/1997
International Patent Classification (IPC) or national classification and IPC C12N15/29		
Applicant CROPDESIGN NV et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 17/03/1999	Date of completion of this report 26.01.00
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Grosskopf, R Telephone No. +49 89 2399 8714



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP98/06749

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-38 as originally filed

Claims, No.:

1-29 as originally filed

Drawings, sheets:

1/1 as originally filed

2. The amendments have resulted in the cancellation of:

the description, pages:
 the claims, Nos.:
 the drawings, sheets:

3. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

the entire international application.
 claims Nos. 26-29.

because:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP98/06749

- the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

- the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

- the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- no international search report has been established for the said claims Nos. 26-29.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:
 - restricted the claims.
 - paid additional fees.
 - paid additional fees under protest.
 - neither restricted nor paid additional fees.
2. This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
 - complied with.
 - not complied with for the following reasons:

see separate sheet
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
 - all parts.
 - the parts relating to claims Nos. .

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP98/06749

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-25
	No: Claims
Inventive step (IS)	Yes: Claims
	No: Claims 1-25
Industrial applicability (IA)	Yes: Claims 1-25
	No: Claims

2. Citations and explanations

see separate sheet

Ad item IV:

The present set of claims lacks unity, namely insofar as it relates to DNA sequences encoding a (novel) cyclin (see Claims 1 and 6 to 29), on the one hand, and general methods for identifying further cyclins (see Claims 2 to 5), on the other hand.

This Authority is not quite sure whether the expression "mitogenic cyclin" should possibly establish a common (inventive) concept. If so, it should be mentioned that said expression is unclear *per se* and, moreover, not suitable to clearly characterise a possible function of the claimed cyclins and/or to distinguish the novel cyclins from the known cyclins (see also below).

Ad item III and V:

The present **application** describes a novel cyclin and the corresponding DNA encoding said cyclin.

As far as the **claims** relate to a precisely defined entity comprising the complete protein (or DNA) or variations thereof which are clearly distinguishable from the known cyclins, novelty and inventive activity could be acknowledged.

Unfortunately, none of the claims is restricted to accordingly defined products or methods using said products.

Since novelty and inventive activity is dependent from the novelty and inventive activity of the independent claims, the objections will be limited to objections which apply for said independent claims (or claims which although referring to an independent claim are not true dependent claims).

Thus in claim 1 the only acceptable characterisation can be found under (a) and (b).

The definition under (c) has no limitation with respect to the length of the claimed fragment and, thus, comprises small fragments which are common with other cyclins (see Fig. 1 of the application) or even with totally unrelated proteins.

The definition under (c) could at best be accepted if combined either with a length which is comparable to the complete DNA or if combined with a clearly defined function.

With regard to both (c) and (d), it must be mentioned that a reference to "a

functional fragment" (which function, if not even the "basic" function is defined? see also above) is unclear and the reference to "an immunologically active fragment" is not suitable to distinguish the fragments from fragments of other cyclins which are identical over long parts of their sequence (see again Fig. 1).

The same, in principle, applies for items (e) and especially for (f) which does not even seem to have the "limitations" of the introductory part.

The same objections apply also for the claims directed to the cyclin itself (see Claim 11).

For the reasons indicated above, also the antibodies claimed are not distinguishable from antibodies recognising other cyclins (again the expression "specifically recognizing" cannot make a meaningful contribution to such a distinction).

Product claim 4 (in addition to the unity objections) does not have any meaningful feature which is suitable to distinguish the entities from known cyclins.

With regard to Claim 5 **all** objections raised above apply: the scope of such a claim is totally undefined.

Since Claims 26 and 29 and 27-28 (partially) have not been searched, no meaningful opinion can be given. It appears as if the non-searchability of said claims was based on the same considerations which apply with respect to Claim 5 above.

Finally, Claims 2 and 3 relate to the use of a known cyclin for screening other cyclins. Such an (analogous) method is trivial.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
VOSSIUS & PARTNER
Postfach 86 07 67
D-81634 München
ALLEMAGNE

EINGEGANGEN
Vossius & Partner
27. JAN. 2000

Frist
belegt

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

26. 01. 00

Applicant's or agent's file reference
C 2551 PCT

IMPORTANT NOTIFICATION

International application No. PCT/EP98/06749	International filing date (day/month/year) 23/10/1998	Priority date (day/month/year) 24/10/1997
-------------------------------------------------	----------------------------------------------------------	----------------------------------------------

Applicant
CROPDESIGN NV et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Vullo, C
Tel. +49 89 2399-8061



INTERNATIONAL COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference C 2551 PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 98/ 06749	International filing date (day/month/year) 23/10/1998	(Earliest) Priority Date (day/month/year) 24/10/1997
Applicant CROPDESIGN NV et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. **Certain claims were found unsearchable** (See Box I).

3. **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP 98/06749

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claims 28 is partially directed to a method of treatment of the human/animal body, in so far as it relates to an in-vivo method, the search has been out and based on the alleged effect of the compound/composition.
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
26, 29 and parts of 27 and 28
See FURTHER INFORMATION sheet PCT/ISA/210
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Claims Nos.: 26, 29 and parts of 27 and 28

The compound of claims 26 and 29 is insufficiently characterized, consequently the claimed subject matter has not been adequately defined according to article 6 PCT, and has not been searched.

Parts of claims 27 and 28 relating to the compound of 26 have likewise not been searched.

The characterization of proteins, DNA sequences and antibodies according to their method of isolation, in at least part of claims 4-25, 27 and 28, is considered insufficient, consequently said claims do not adequately define the subject matter according to article 6 PCT. In the case of these claims, the search for the subject matter defined in such manner, has been restricted to documentation retrievable using the sequence data provided or during a search for the isolation method.

INTERNATIONAL SEARCH REPORT

International Application No

EP 98/06749

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C12N15/29 C07K14/415 C12N15/82 G01N33/53 A01N65/00
A01H5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12N C07K A01H A01N G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	NAKAMURA, Y.: "Arabidopsis thaliana genomic DNA, chromosome 5, P1 clone: MNA5" EMBL ACCESSION NO. AB011479, 10 March 1998, XP002094910 see sequence 55385 - 55650 ---	1
X	SONI R ET AL: "A FAMILY OF CYCLIN D HOMOLOGS FROM PLANTS DIFFERENTIALLY CONTROLLED BY GROWTH REGULATORS AND CONTAINING THE CONSERVED RETINOBLASTOMA PROTEIN INTERACTION MOTIF" PLANT CELL, vol. 7, January 1995, pages 85-103, XP002045510 see the whole document ---	1, 4-6, 8, 9, 11, 12, 27
Y	---	13-25, 28 -/-

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

1 March 1999

16/03/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Maddox, A

INTERNATIONAL SEARCH REPORT

International Application No

/EP 98/06749

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DAHL M ET AL: "THE D-TYPE ALFALFA CYCLIN GENE CYCM84 COMPLEMENTS G1 CYCLIN-DEFICIENT YEAST AND IS INDUCED IN THE G1 PHASE OF THE CELL CYCLE" PLANT CELL, vol. 7, November 1995, pages 1847-1857, XP002045513 see the whole document ----	1,4-6,8, 9,11,12, 27
Y	DOERNER P ET AL: "CONTROL OF ROOT GROWTH AND DEVELOPMENT BY CYCLIN EXPRESSION" NATURE, vol. 380, 11 April 1996, pages 520-523, XP002045509 see the whole document ----	13-25,28
Y	WO 92 09685 A (UNIV AUSTRALIAN) 11 June 1992 see the whole document ----	13-23,28
Y	WO 97 20842 A (CENTRE NAT RECH SCIENT ;MEIJER LAURENT (FR); BISAGNI EMILE (FR); L) 12 June 1997 see page 9, line 8 - line 16 see page 13, line 14 - line 17 ----	24,25
Y	WO 97 16447 A (MITOTIX INC ;MANSURI MUZAMMIL M (US); MURTHI KRISHNA K (US); PAL K) 9 May 1997 see page 31, line 1 - line 7 see page 60, line 1 - line 15; claim 39 ----	24,25
X	WANG H ET AL: "A PLANT CYCLIN-DEPENDENT KINASE INHIBITOR GENE" NATURE, vol. 386, 3 April 1997, page 451/452 XP002054969 see the whole document ----	24
X	PLANCHAINS, S., ET AL.: "Roscovitine, a novel cyclin-dependent kinase inhibitor, characterizes restriction point and G2/M transition in tobacco BY-2 cell suspension" PLANT JOURNAL, vol. 12, no. 1, 1997, pages 191-202, XP002094755 see page 195, last paragraph - page 196 ----	24,25

INTERNATIONAL SEARCH REPORT

International Application No

/EP 98/06749

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	DE VEYLDER, L., ET AL.: "Identification of proteins interacting with the <i>Arabidopsis Cdc2at</i> protein" <i>J. EXPERIMENTAL BOTANY</i> , vol. 48, no. 317, December 1997, pages 2113-2114, XP002067456 see page 2114, left-hand column ---	2-9
P, X	DATABASE BIOSIS BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US AN 1998:358897, CRUZ-GARCIA, F., ET AL.: "Effect of stimulating maize germination on cell cycle proteins" XP002095095 see abstract & <i>PHYSIOLOGIA PLANTARUM</i> , vol. 102, no. 4, April 1998, pages 573-581, ---	12
P, X	WANG, H., ET AL.: "ICK1, a cyclin-dependent protein kinase inhibitor from <i>Arabidopsis thaliana</i> interacts with both Cdc2a and CycD3, and its expression is induced by abscisic acid" <i>THE PLANT JOURNAL</i> , vol. 15, no. 4, August 1998, pages 501-510, XP002095094 see page 503, left-hand column, last paragraph - right-hand column see page 508, right-hand column, last paragraph ---	24, 25
P, X	WO 98 42851 A (MURRAY JAMES AUGUSTUS HENRY ;UNIV CAMBRIDGE TECH (GB)) 1 October 1998 see the whole document ---	4-9, 11-23, 27, 28
P, Y	WO 98 03631 A (SALK INST FOR BIOLOGICAL STUDI) 29 January 1998 see the whole document ---	13-23, 28
A	VEYLDER DE L ET AL: "THE ARABIDOPSIS CKS1 AT PROTEIN BINDS THE CYCLIN-DEPENDENT KINASES CDC2AAT AND CDC2BAT" FEBS LETTERS, vol. 412, no. 3, 4 August 1997, pages 446-452, XP002047992 see the whole document ---	2-10
A	WO 93 24514 A (MITOTIX) 9 December 1993 see claims 34-36 ---	12, 28
		-/-

INTERNATIONAL SEARCH REPORT

International Application No

/EP 98/06749

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DOONAN J: "PLANT GROWTH: ROOTS IN THE CELL CYCLE" CURRENT BIOLOGY, vol. 6, no. 7, 1 July 1996, page 788/789 XP002045511 see the whole document ---	13-23,28
A	XI Q ET AL: "PLANT CELLS CONTAIN A NOVEL MEMBER OF THE RETINOBLASTOMA FAMILY OF GROWTH REGULATORY PROTEINS" EMBO JOURNAL, vol. 15, no. 18, 1996, pages 4900-4908, XP002045512 see the whole document .	13-23,28
A	GRAFI G ET AL: "A MAIZE cDNA ENCODING A MEMBER OF THE RETINOBLASTOMA PROTEIN FAMILY: INVOLVEMENT IN ENDOREPLICATION" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, vol. 93, no. 17, 20 August 1996, pages 8962-8967, XP002042542 see the whole document	13-23,28
A	HEMERLY A ET AL: "DOMINANT NEGATIVE MUTANTS OF THE CDC2 KINASE UNCOUPLE CELL DIVISION FROM ITERATIVE PLANT DEVELOPMENT" EMBO JOURNAL, vol. 14, no. 16, 1995, pages 3925-3936, XP002045514 see the whole document	13-23,28
A	WO 93 15213 A (ZENECA LTD) 5 August 1993 see claims 1-4 -----	13-23,28

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/EP 98/06749

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9209685	A 11-06-1992	AU 657722	B	23-03-1995
		AU 9046291	A	25-06-1992
		CA 2097286	A	30-05-1992
		EP 0559729	A	15-09-1993
		JP 6504430	T	26-05-1994
		US 5750862	A	12-05-1998
WO 9720842	A 12-06-1997	FR 2741881	A	06-06-1997
		CA 2238843	A	12-06-1997
		EP 0874847	A	04-11-1998
WO 9716447	A 09-05-1997	US 5733920	A	31-03-1998
		AU 1116497	A	22-05-1997
WO 9842851	A 01-10-1998	AU 7521298	A	20-10-1998
WO 9803631	A 29-01-1998	AU 3960597	A	10-02-1998
WO 9324514	A 09-12-1993	US 5869640	A	09-02-1999
WO 9315213	A 05-08-1993	AU 3362293	A	01-09-1993